REMARKS

This Amendment is in response to the Office Action of February 24, 2006 in which the Examiner made a technical objections to claim 2. The term "capacitor" has been changed to "freely oscillating inverter".

The Examiner rejected claims 1 and 2 as allegedly anticipated by Bock, U.S. Patent No. 4,313,155.

The Examiner's rejection of the claims is respectfully traversed for the reasons set forth below.

Bock (US 4,313,155) relates to a modular arrangement of DC to DC power conversion units which permits variation of power handling capability without changing the power control system. Thus the idea of Bock is to use multiple paralleled converters to gain a suitable output voltage.

In the reference, high voltage input is converted with paralleled converters to a lower voltage output.

The need for such paralleled converters and capacitors in series is because cheaper switch components can be used, since the voltage of the input is divided between the capacitors. In other words the high input voltage is divided with the capacitors to the converters, which can be rated to that lower voltage.

As shown in Figure 1 of Bock, each converter unit comprises two conversion units (12, 14) (col. 3, lines 25-26). Similarly the basic structure of the converter comprises two series connections of capacitors. The two conversion units are powered from different capacitors.

In the lowermost converter unit (12D, 14D) of Figure 2, there are also current measurements that measure currents of the stacked converter units (col. 7, lines 25-28).

Bock also comprises a power control circuit 133, which regulates the output voltage developed across capacitor 102 (col. 7, lines 31-33). This circuit 133 receives as inputs the measured currents and the output voltage. The power control circuit further provides gating signals to the control terminals 48, 50 and 82, 84 for controlling the converters.

Thus Bock does not disclose the use of freely oscillating inverters but instead shows ones that are controlled by using a separate control circuit. The control unit 133 provides gating pulses in response to gating signal which may be varied. This, gating is not for a free running oscillator but is input frequency dependent. Accordingly, it is believed that the reference does not show or suggest the claimed combination.

The circuitry of Bock does not help in balancing of voltages of the capacitors. If the capacitors of any series connection are ideal and similar, then the voltage is divided evenly. As this is not the case in real life, the voltages are not evenly divided between the capacitors. The only place in Bock where reference is made to the division of the voltage between the capacitors is in col. 2, lines 56-61. There it is stated that "*Any tendency of the currents to become unbalanced due to differences in transistor storage time, for example, results in a small change in the voltage of the capacitor connected across that stage which forces the required correction in the average transistor current.*" Thus in Bock the currents between the stages are balanced, i.e. each capacitor provides equal amount of current. As stated above, if the currents, which are also measured, become unbalanced, then voltage of the capacitor is changed. This change of capacitor voltage is further made away from balanced situation, since the voltage is changed to compensate current. This concept clearly shows that there is neither intention nor possibility in Bock to obtain a balancing of the voltages.

As previously noted, the present invention relates to balancing voltages of series connected capacitors which are connected in the intermediate voltage circuit of a frequency converter. These voltages must be balanced somehow. In prior systems the balancing was accomplished by using resistors in parallel with each capacitor. This solution leads to balancing, but at the cost of significant power dissipation.

The present invention achieves balancing by providing a voltage source that can be used as an auxiliary voltage. The balancing circuit does not need any control signals because it is freely oscillating. In addition, excessive power dissipatic does not result.

Bock does not disclose a freely oscillating system. Bock uses feedback from the measured output voltage (col. 8 lines 41-45). Thus, the oscillation is related to the measured voltage. In contrast, a freely oscillating system does not employ a feedback loop or other system to control oscillation. Self oscillation is described in pate 3 lines 24-29 of the specification of the present application, whereas the feedback and controller for controlling oscillation is based on measured values.

Also, as stated in the reference at col. 8 line 41, a regulated output voltage is provided. This is achieved with feedback described above. In the present invention the voltage is not regulated. See for example page 4 lines d2-4 where it is stated that " it is clear that large tolerances should be allowed for this intermediate auxiliary voltage because the range of variation of the primary voltage is also large". This means that when the voltage of the capacitors changes, the cange is alos seen in the output voltage.

Even if the system of the reference would freely oscillate, which it does not, it would still not balance the voltages of the capacitors connected in series.

Thus in Bock the currents between the stages are balanced, i.e. each capacitor provides equal amount of current. As stated above, if the currents, which are also measured, become unbalanced, then voltage of the capacitor is changed. This change of capacitor voltage is made further unbalanced because the voltage is changed to compensate current. Accordingly the reference cannot balance the voltages.

In view of the foregoing, it is respectfully requested the Examiner reconsider his rejections of the claims, and the allowance of which is earnestly solicited.

Respectfully submitted,

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